

# NASA TECH BRIEF



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## Shortened Horn-Reflector Antenna

A shortened horn-reflector antenna was designed to overcome the mechanical disadvantages and complexity of the conventional horn-reflector antenna.

The shortened horn-reflector antenna is a modification of the conventional horn-reflector antenna in which the horn is replaced by a hyperboloidal sub-reflector, and Cassegrainian feeding is used. The shortened antenna offers broadband performance, economic construction, very low antenna temperature, and excellent pattern performance. A comparison of the performance of a model having a 6-foot aperture with that of a conventional horn-reflector antenna is given below. It is assumed that both antennas are operated with a receiver having a temperature of 25°K, at C-band frequencies, and with feed line losses of 0.20 dB.

	<u>Shortened Antenna</u>	<u>Conventional Antenna</u>
Aperture efficiency	65 percent	55 percent
Antenna temperature	6°K	40°K
Figure of merit	1.7 dB	-1.46 dB

### Note:

Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
Goddard Space Flight Center  
Greenbelt, Maryland 20771  
Reference: B67-10017

### Patent status:

No patent action is contemplated by NASA.

Source: Paul A. Lantz  
(GSFC-502)

Category 01